means for READING out codeword segments from said x-y submatrices in READ operations having a second page-change overhead operation, to create an encoded and interleaved data-bit stream;

means for addressing said WRITE and said READ operations into and out of said submatrices to substantially redistribute said first page-change overhead operation to said second page-change overhead operation, thereby to equalize the rate of said WRITE and said READ operations; and

means for transmitting said encoded and interleaved data-bit stream into said optical free space medium.

Claim 21. Apparatus in accordance with claim 20, further comprising

means for WRITING K-consecutive entries of said blocks of codeword segments into each one of said submatrices; and

means for changing pages in said READ operations at a rate determined by the number of said consecutive entries K.

Claim 22. Apparatus in accordance with claim 21, wherein said means for addressing said WRITE and READ operations further comprises:

means for WRITING into successive said columns of said submatrix cells corresponding segments of successive said codewords comprising a SDRAM page; and

means for remapping said submatrix cell addresses for READout to maintain the number of said columns held on one said page to a number that ensures a physical SDRAM page change at intervals which make said **READ and WRITE rates** substantially equal.

Claim 23. Apparatus in accordance with claim 21 further comprising

means for receiving said codeword segments for entry into said submatrices by row; and

means for effecting a said physical SDRAM page change following completion of the number of said entries by row that equalizes said first and said second page-change overhead operations.

Claim 24. Apparatus in accordance with claim 22, wherein each said submatrix is a square, the dimensions of each side of said square being equal to the square root of the number of said codewords comprising each said

physical page.

Claim 25. Apparatus in accordance with claim 23, further comprising:
means for sensing conditions in said medium which cause scintillation effects; and
means for activating said encoding and said interleaving steps when said conditions are detected..

Claim 26. Apparatus in accordance with claim 25, further comprising:
a remote receiver, said receiver comprising means for deinterleaving and decoding said encoded and interleaved data-bit stream.

Claim 27. Apparatus in accordance with claim 26, wherein
said SDRAM devices comprise storage cell capacity sufficiently large to correct an error burst of the order of 20 million bits.

Claim 28. Apparatus in accordance with claim 27, wherein
said Reed-Solomon code is of the (255,223) format.

Claim 29. Apparatus in accordance with claim 28, wherein
said encoding means encodes said transmission payload data-bit stream into blocks of substantially 156,250 codewords to be interleaved.

Claim 30. Apparatus in accordance with claim 29, wherein
said codeword size is substantially 2040 bits.

Claim 31. Apparatus in accordance with claim 30, wherein
said fragmenting means segments each said codeword into substantially 60-bit segments for interleaving in said submatrices of said SDRAM devices.

Claim 32. Apparatus for transmitting a transmission payload data bit-stream through an optical free-space medium, said apparatus comprising:

means for encoding an optical transmission payload data bit-stream into codewords using Reed-Solomon encoding

means for fragmenting each of said codewords into segments;

a SDRAM buffer store having an entry receive and transmit rate and comprising a matrix of memory cells,

said matrix of memory cells further comprising a repeating x-y submatrix, each said repeating x-y submatrix being arranged to receive a plurality of said segments comprising a single SDRAM physical page;

means for effecting a WRITE operation to interleave corresponding segments of successive said codewords into each said repeating x-y submatrix of said memory cells;

said WRITE operation having an associated first page-change overhead operation,

means for effecting a READ operation to read out each said repeating x-y submatrix of said memory cells;

said READ operation having an associated second page-change overhead operation,

said WRITE and said READ operations into and out of each said repeating x-y submatrix of said memory cells being conducted to substantially redistribute page change overhead operations from said WRITE operation to said READ operation, thereby to equalize the rate of said WRITE and READ operations; and

means for transmitting the interleaved said segments into said optical free-space medium.